Inventec

Open, Standard and Programmable Network for All

D7032Q28B Data Center Switch Data Sheet

Product Overview

The Inventec D7032Q28B is a 100GbE spine switch suited for Datacenter applications as well as Enterprise and Service Provider network deployments. It is capable of line-rate L2/ L3 (3.2 Tbps) switching performance in a compact 1RU form factor. The D7032Q28B switch offers an option of either a 2.4GHz x86 Quad-Core or 1.5GHz PPC Quad-Core CPU and supports a total of 32 x 100GbE QSFP28 interfaces with a true PHY-less design. Redundancy features including high-availability features including hot-swappable (1+1) redundant PSUs and (N+1) fan trays are standard.

Support for Open Network Ecosystems

The Inventec D7032Q28B supports multiple Network Operating Systems (NOS) including: Inventec IN-OS, Cumulus® Linux®, and Pica8® PicOS®. The Inventec D7032Q28B is also OpenFlow and SDN enabled. Full ONIE support assures network operators that the Inventec D7032Q28B seamlessly integrates into today's open network environments.

Feature-Richness, Performance, and Port Density

The Inventec D7032Q28B offers low cut-through mode latency, 16MB on-chip packet buffer memory, and dynamic buffer management. Dedicated unicast and multicast queues provide separate scheduling structures with support for applications such as IEEE 802.1Q, VxLAN, L2GRE, and NVGRE. Overall feature-richness, high-availability, performance, port-density, and line-rate switching capability make the D7032Q28B an excellent choice for next generation large and medium sized datacenters. This also makes the D7032Q28B well suited for use as a general purpose aggregation and core switch in Enterprise and Service Provider networks.

Product Highlights

Performance

- 2976M Packets per Second
- 6.4 Terabits per Second Throughput
- Line Rate L2/L3 Forwarding
- 16MB Packet Buffer
- 32x100G QSFP28

Scalability

- 136K MAC Entries (HW Capable)
- 128K IPv4 Host Routes
- 72K IPv4 Routes
- 36K IPv6 Routes
- 64K Mroutes
- 32K IPv6 Mroutes
- 4K VLANs

Control Plane

- CPU Options
  - 2.4 GHz x86 Quad-Core
  - 1.5 GHz PPC Quad-Core
- 2x4GB DDR3 DIMM
- 2x512MB SPI Boot Flash

High Availability

- 1 + 1 Hot-Swappable & Redundant Power Supply
- 2 x SPI Flash Supports Boot Recovery
- 3 + 1 Hot-Swappable & Redundant Fans
- 802.3ad Link Aggregation/LACP
  - 256 Ports/Channel
  - 1024 Groups per System

Flexible Storage

- 1 x USB Port for External Storage

Programmability and Software Support

- Inventec IN-OS, Cumulus® Linux® and Pica8® PicOS®
- ONIE
- Open Source Software Provided as RPM
- Chef and Puppet Client Integration
- Bash Shell

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*Estimates based on hardware specifications.

**Specification pending verification.

Product Highlights (Continued)

Layer 2

- Dynamic ARP
- Jumbo Ethernet Frames (up to 9416 bytes)
- Storm Control
  - Broadcast, Unknown
  - Unicast/Multicast
- STP
  - Rapid Spanning Tree (802.1w)
  - Multiple Spanning Tree (802.1s)
- VLAN
  - IEEE 802.1Q tagged based
  - Q in Q VLAN (802.1ad)
  - Private VLAN
- LLDP (802.1AB)
- Link Aggregation
  - 802.3ad with LACP
  - Virtual Port Channel
- Snooping
  - IGMP v1/v2/v3, DHCP, DHCPv6, MLDv1/v2

QoS

- 802.1p, IP Precedence and DSCP Based Classifications
- Differentiated Services
- Rate limiting
- Strict Priority Queueing
- Traffic Shaping
- Up to 20 Queues per Port
- WRED

Network Management and Monitoring

- CLI
- Telnet/SSH
- TFTP/Xmodem/FTP
- IPv6 Management
- Port Mirroring
- sFlow

Layer 3

- Address Resolution Protocol (ARP)
- IGMP v2/v3
- Internet Control Message Protocol (ICMP v4/v6)
- IPv6 (ICMP, OSPF v3, BGP, MLD)
- Open Shortest Path First (OSPF v2/v3)
- PIM-SM, PIM-SSM, PIM-BIDR, PIM-DM
- Policy Based Routing
- Static route
- Virtual Router Redundancy Protocol (VRRP)
- Border Gateway Protocol (BGP), Multiprotocol Extensions for BGP-4 (MP-BGP)
- Equal Cost Multipath (ECMP) (xx-way)

Security

- AAA (Accounting and Authorization)
- ACL Logging and Mirroring
- DHCP Snooping
- DOS Protection
- Ingress/Egress L2/L3/L4 ACL
- IP Source Guard
- Management IP Filtering (SNMP/ Telnet / SSH)
- Port MAC Locking
- Protected Ports
- Static MAC Filtering
- RADIUS
- TACACS+

Datacenter

- Priority-based Flow control (802.1Qbb)
- Enhanced Transmission Selection (802.1Qaz)
- Data Center Bridging Protocol (802.1Qaz)
- Quantized Congestion Notification (802.1Qau)
- L2 in L3 Tunneling (VxLAN/L2GRE/NVGRE)
- OpenFlow Switch Specification 1.0

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Product Specifications

Category	Description	Specifications
Physical	Form Factor	1RU Fixed
	Dimensions	439.92x43.18x431.80mm (17.32x1.70x17.00inch)
	Weight	9.3 kg (20.50 lbs)
	Interfaces	32 x100GbE QSFP28
	Power Supplies	2 (1+1) Hot-Swappable & Redundant
	Power Connector	IEC320-C13
	Fans	5 (N+1) Hot-Swappable & Redundant
	System Flash	8GB System Flash
	SSD Storage	64 GB
	External I/O	1 x USB
	MGMT Port	1 x GE RJ-45
	Console Port	1 x RJ45 (RS-232)
	Reset	1 x Reset Button (Front Panel Mounted)
	Status LEDs	System Health Status/Fan Status
	Activity LEDs	Link Activity/Status
Optics and Cables	QSFP28	Active Optical Cable (AOC)
		100GBASE-LR4
		100GBASE-SR4
		100G PSM4
		100GE-CWDM4
Performance and Scalability	Forwarding	2976 Mpps
	Throughput	6.4 TB per Second Bi-directional
	Latency	500 nanosecond (fiber)*
	Layer 2	136K Mac addresses, 4K Vlans
	Layer 3	128K IPv4 host routes, 72K IPv4/36K IPv6 routes, 64K IPv4/32K IPv6 Mroutes
	Redundancy	256 x 802.3ad groups; 32-way ECMP
	Buffer	16MB
	Memory	8GB
Power	Type	AC
	Input Voltage	100~240VAC
	Input Current**	_____ A~_____ A
	Input Frequency	50/60Hz
	Typical/Max Power Draw	350W/410W
Cooling	Front to Back Airflow	Yes
	Back to Front Airflow	Yes
Environmental	Operating Temperature	0~45C
	Storage Temperature	-40~70C
	Relative Humidity	20~80%
	Altitude	0~3000m(0~10,000ft)
Compliance	EMI	CISPR-22/FCC Part 15
		IEC61000-3-2/3
		IEC61000-4-2/3/4/5/6/11
	Safety	CB:IEC60950-1 (2nd)
		CCC:GB 4943.1-2011
	RoHS	RoHS-6

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Standards and RFC Compliance

- RFC 1112 — Host extensions for IP multicasting
- RFC 1256 — ICMP router discovery messages
- RFC 1321 — Message digest algorithm
- RFC 1519 — CIDR
- RFC 1765 — OSPF database overflow
- RFC 1812 — Requirements for IPv4 routers
- RFC 1981 — Path MTU for IPv6
- RFC 1997 — BGP Communities Attribute
- RFC 2131 — DHCP relay
- RFC 2236 — IGMP v2
- RFC 2328 — OSPFv2
- RFC 2365 — Administratively scoped boundaries
- RFC 2370 — The OSPF Opaque LSA Option
- RFC 2385 — Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2460 — IPv6 Protocol Specification
- RFC 2461 — Neighbor Discovery
- RFC 2462 — Stateless Autoconfiguration
- RFC 2464 — IPv6 over Ethernet
- RFC 2474 — Definition of the differentiated services field (DS Field) in the IPv4 and IPv6 headers
- RFC 2475 — An architecture for differentiated services
- RFC 2545 — BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC 2597 — Assured forwarding PHB group
- RFC 2710 — MLDv1
- RFC 2711 — IPv6 Router Alert
- RFC 2918 — Route Refresh Capability for BGP-4
- RFC 3021 — Using 31 -Bit Prefixes on IPv4 Point-to-Point Links
- RFC 3046 — DHCP/BOOTP relay
- RFC 3056 —Connection of IPv6 Domains via IPv4 Clouds
- RFC 3101 — The OSPF "Not So Stubby Area" (NSSA) option
- RFC 3137 — OSPF Stub Router Advertisement
- RFC 3246 — An expedited forwarding PHB (Per-Hop Behavior)
- RFC 3260 — New terminology and clarifications for DiffServ
- RFC 3315 —Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3376 — IGMPv3
- RFC 3484 —Default Address Selection for IPv6
- RFC 3493 —Basic Socket Interface for IPv6
- RFC 3513 — Addressing Architecture for IPv6
- RFC 3542 —Advanced Sockets API for IPv6
- RFC 3587 —IPv6 Global Unicast Address Format
- RFC 3623 — Graceful OSPF Restart
- RFC 3633 — IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6
- RFC 3736 — Stateless DHCPv6
- RFC 3768 —Virtual Router Redundancy Protocol (VRRP)
- RFC 4213 —Basic Transition Mechanisms for IPv6
- RFC 4271 — A Border Gateway Protocol 4 (BGP-4)
- RFC 4291 — Addressing Architecture for IPv6
- RFC 4443 — ICMPv6
- RFC 4456 — BGP Route Reflectors
- RFC 4486 — Subcodes for BGP Cease Notification Message
- RFC 4541 — IGMP snooping
- RFC 4760 — Multiprotocol Extensions for BGP-4
- RFC 5171 —Unidirectional Link Detection (UDLD) Protocol
- RFC 5340 — OSPF for IPv6
- RFC 5492 — Capabilities Advertisement with BGP-4
- RFC 6164 —Using 127-Bit IPv6 Prefixes on Inter-Router Links
- RFC 6583 — Operational Neighbor Discovery Problems
- RFC 6860 — Hiding Transit-Only networks in OSPF
- RFC 826 — Ethernet ARP
- RFC 894 — Transmission of IP datagrams over Ethernet networks
- RFC 896 — Congestion control in IP/TCP networks
- RFC3810 — MLDv2
- RFC3973 — PIM-DM
- RFC4601 — PIM-SM
- ANSI/TIA-1057 — LLDP-MED
- Draft-ietf-idmr-dvmrp-v3-10 — DVMRP
- Draft-ietf-magma-igmp-proxy-06.txt — IGMP/MLD-based multicast forwarding (IGMP/MLD proxying)
- Draft-ietf-magma-igmpv3-and-routing-05.txt — IGMPv3 and multicast routing protocol interaction
- IEEE 802.1AB — Link level discovery protocol
- IEEE 802.1D — Spanning tree
- IEEE 802.1p — Ethernet priority with user provisioning and mapping
- IEEE 802.1Q—Virtual LANs w/ port-based VLANs
- IEEE 802.1S — Multiple spanning tree
- IEEE 802.1W — Rapid spanning tree
- IEEE 802.1X — Port-based authentication
- IEEE 802.3ac — VLAN tagging
- IEEE 802.3ad — Link aggregation
- IEEE 802.3x — Flow control

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